

WHAT IS CLAIMED IS:

1. A circuit for generating a current, comprising:
a first current generator providing a constant current in response to a constant voltage;
a voltage generator providing a temperature dependent voltage; and
a second current generator coupled to the voltage generator providing a variable current in response to the temperature dependent voltage.
2. The circuit of claim 1, wherein the voltage generator includes a resistor having a temperature dependent resistance.
3. The circuit of claim 1, wherein the voltage generator includes a current source, a temperature dependent resistor coupled to the current source, and an output terminal disposed between the current source and the resistor.
4. The circuit of claim 2, wherein the temperature dependent resistance of the resistor increases as the temperature increases, and decreases as the temperature decreases.
5. The circuit of claim 3, wherein the second current generator includes a transistor having a gate coupled to the output terminal.
6. A circuit for generating a temperature dependent current, comprising:

a voltage generator providing a temperature dependent voltage;
a current source of the voltage generator providing a constant current;
a resistor of the voltage generator having a temperature dependent resistance;
an output terminal of the voltage generator disposed between the current source and the resistor; and
a current generator including a transistor having a gate coupled to the output terminal, the current generator providing a current in response to the temperature dependent voltage.

7. The circuit of claim 6, wherein the temperature dependent resistance increases as an operation temperature increases, and decreases as an operation temperature decreases.

8. A circuit for providing a refresh cycle for a memory device, comprising:
a first current generator providing a first current in response to a constant voltage;
a voltage generator providing a temperature dependent voltage;
a second current generator providing a second current in response to the temperature dependent voltage; and
a frequency generator providing a frequency in response to the sum of the first and second currents.

9. The circuit of claim 8, wherein the voltage generator includes a current source, a resistor having a temperature dependent resistance, and an output terminal coupled between the current source and the resistor.

10. The circuit of claim 9, wherein the second current generator includes a transistor having a gate coupled to the output terminal.

11. The circuit of claim 8, wherein the second current is turned off at a predetermined temperature.

12. The circuit of claim 8, wherein the frequency generator includes a comparator and a capacitor.

13. A circuit for providing a restore cycle for a memory device, comprising:
an input signal having a first state and a second state;
a first voltage generator providing a constant voltage;
a first current generator providing a first current in response to the first state of the input signal and the constant voltage;
a second voltage generator providing a temperature dependent voltage; and
a second current generator providing a second current in response to the temperature dependent voltage and the first state of the input signal.

14. The circuit of claim 13, wherein the first current generator includes a capacitor being charged in response to the second state of the input signal.

15. The circuit of claim 13, wherein the first current generator includes a transistor having a gate biased at the constant voltage.

16. The circuit of claim 13, wherein the second current generator includes a capacitor being charged in response to the second state of the input signal.

17. The circuit of claim 13, wherein the second current generator includes a transistor having a gate biased at the temperature dependent voltage.

18. A method of providing a refresh cycle for a memory device, comprising:
providing a constant voltage;
generating a first current in response to the constant voltage;
providing a temperature dependent resistance;
generating a temperature dependent voltage by flowing a constant current through the resistor;

generating a second current in response to the temperature dependent voltage; and

generating a frequency in response to the sum of the first and second currents.

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19. The method of claim 18, further comprising increasing the temperature dependent resistance as an operation temperature increases.

20. The method of claim 18, further comprising turning off the second current when temperature falls below a predetermined point.

21. A method of providing a restore cycle for a memory device, comprising:
providing an input signal having a first state and a second state;
providing a constant voltage;
generating a first current in response to the first state of the input signal and the constant voltage;
providing a temperature dependent resistance;
generating a temperature dependent voltage by flowing a constant current through the resistor; and
generating a second current in response to the temperature dependent voltage and the first state of the input signal.

22. The method of claim 21, further comprising charging a capacitor in response to the second state of the input signal.

23. The method of claim 21, further comprising biasing a transistor of the first current generator at the constant voltage.

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24. The method of claim 21, further comprising biasing a transistor of the second current generator at the temperature dependent voltage.

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